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Auteurs: Authors:	Ali Rhouma, Georg Aaron Seitfudem, Jerome El Jeitany, Tommaso Pacetti, Floor Brouwer, & José M. Gil
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Supplementary Information S2

Domestic production of selected crops

The blue water footprint of irrigation data in (Mialyk et al., 2024) does not consider Malta. Therefore, this analysis does not consider Malta. The water scarcity footprints (WSF's) are calculated using non-marginal AWARE CFs, since the ratio between total country water consumption and the irrigation water consumption is comparatively high (Table 1). (Boulay et al., 2020) recommend not using AWARE CFs if the inventory contributes more than 5% of the total water consumption.

Table 1: Share of water consumption of target crops to entire national water consumption, using modeled national water consumption values of 2019 from (Seitfudem et al., 2024). Please note that the latter are only approximate values due to the modeling approach.

	Total consumptive water demand	irrigation water footprint of target crops	ratio
Algeria	5.4E+09	1.1E+09	20%
Egypt	6.2E+10	2.0E+10	32%
Spain	2.5E+10	3.7E+09	15%
Greece	5.6E+09	1.3E+09	23%
Croatia	1.8E+08	1.0E+06	1%
Italy	1.2E+10	8.3E+08	7%
Jordan	9.4E+08	2.4E+07	3%
Lebanon	7.8E+08	4.0E+07	5%
Libya	2.7E+09	1.4E+09	52%
Morocco	1.4E+10	1.7E+09	12%
Portugal	1.6E+09	4.0E+08	24%
Slovenia	7.6E+07	2.4E+04	0%
Tunisia	3.8E+09	2.3E+08	6%
Türkiye	2.5E+10	1.8E+09	7%
Cyprus	3.4E+08	1.1E+07	3%
France	8.1E+09	4.9E+08	6%
Israel	9.8E+08	2.0E+07	2%

For the marginal AWARE CFs, different aggregations to country level are available, representing the spatiotemporal patterns of water consumption for specific sectors, such as the irrigated agriculture sector. For non-marginal water consumption, only generic CFs are available, not distinguishing between sector-specific spatiotemporal patterns (CFs in Supplementary Information S1). For the following analysis, both versions of AWARE CFs were used, as well as the marginal AWARE2.0 CFs, an updated version of AWARE (Seitfudem et al., 2024). In all three versions, Egypt has the highest WSF linked to the studied crops, while for countries such as Croatia, Cyprus, France, Israel, Jordan, Lebanon, Portugal, Slovenia, the WSF is by orders of magnitude smaller (Figure 1 and Figure 2).

Since this comparison only targets a subset of crops, which might not even be grown or artificially irrigated in all the countries concerned, it omits the bigger picture of overall water scarcity footprints of irrigation. Using data for all crops included in (Mialyk et al., 2024) however shows that the ranking of countries according to the irrigation WSF is similar if all 175 crops are included (Figure 3).

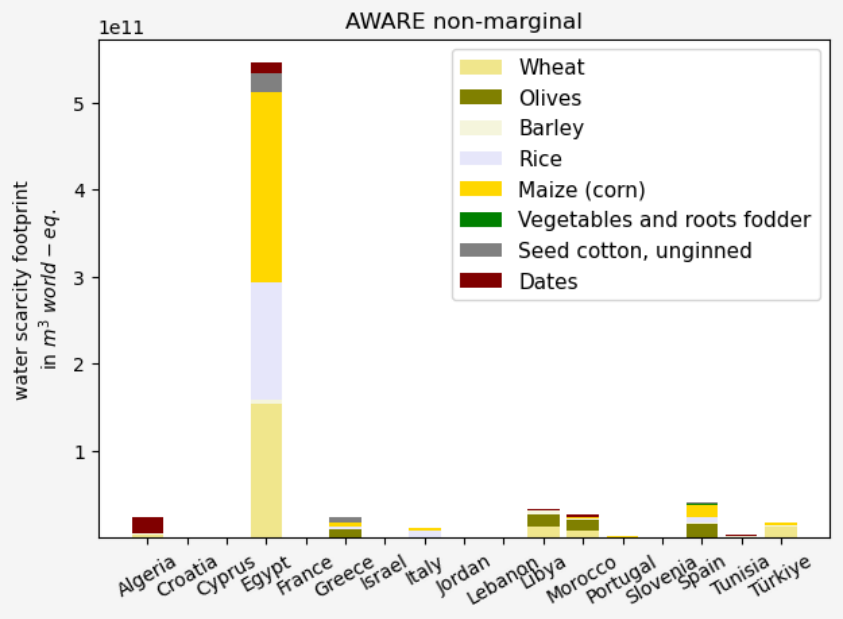

Figure 1: AWARE results for the irrigation water consumption of domestically produced crops.

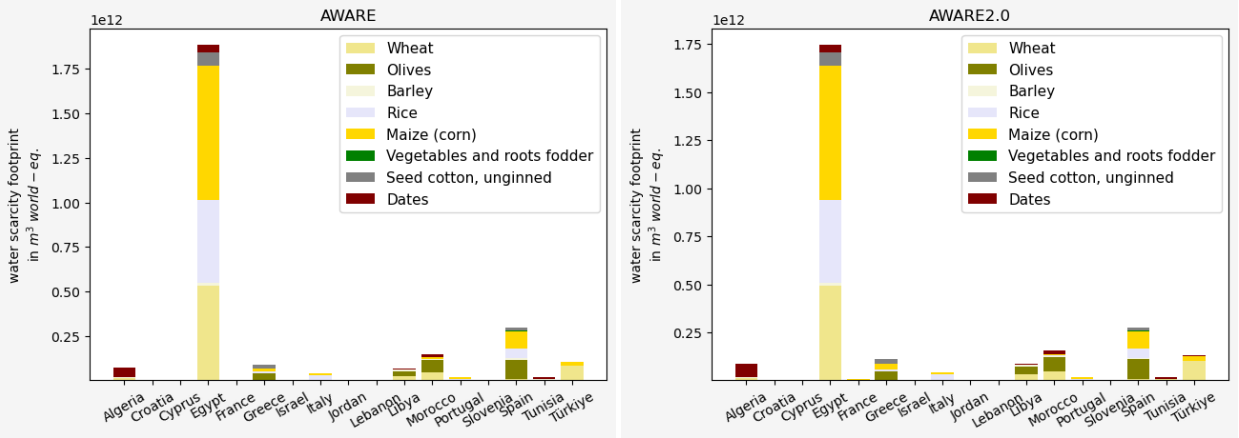

Figure 2: Non-marginal AWARE results for the irrigation water consumption of domestically produced crops, using national CFs for agricultural water consumption from AWARE (Boulay et al., 2018) and AWARE2.0 (Seitfudem et al., 2024).

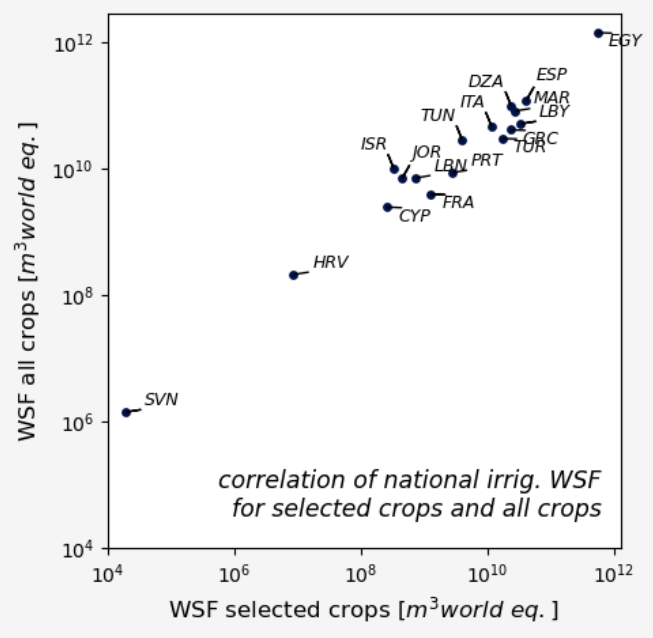

Figure 3: National WSF of domestic crop irrigation, considering the eight selected crops and all crops included in (Mialyk et al., 2024). Rank correlation coefficient: 0.95. Please note the logarithmic axes.

Domestic production and import of selected crops

Impacts of the domestic production of the raw crops can be contrasted to the impacts of the imported raw crops. Trade data was obtained from FAOSTAT (FAO, 2023) and the imported crops in metric tons were matched with the blue water footprint in m^3/ton of production of the respective crop in the exporting country. The blue water footprint of the import in m^3 was then multiplied with the exporting country's CF. It is important to note that trade data from FAOSTAT does not exactly match the crop names of (Mialyk et al., 2024): First, vegetables and roots fodder does not seem to be traded or is at least not included in the import data for the mediterranean countries. Second, 'Cotton lint, ginned', from (Mialyk et al., 2024) was matched to 'Seed cotton, unginned' in FAOSTAT, appearing to be the best match possible between the two datasets.

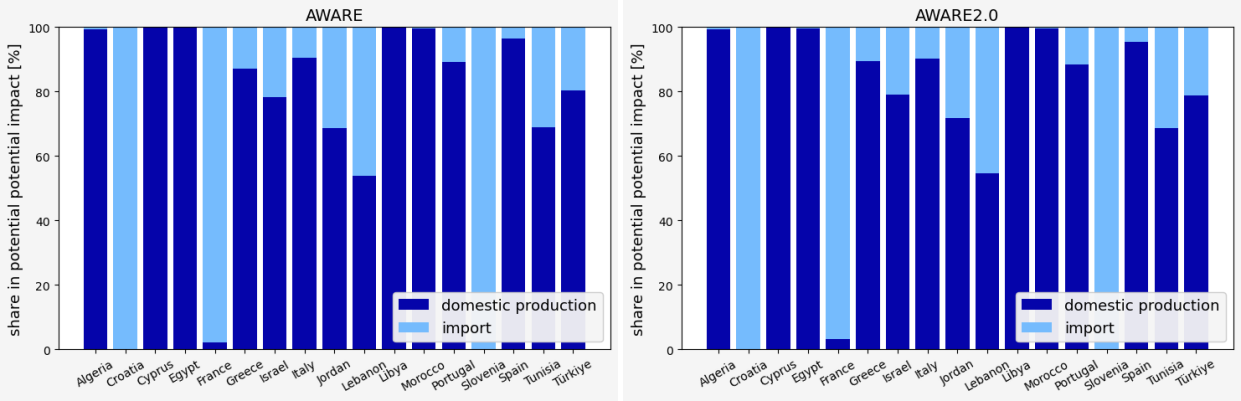

Figure 4: Share of domestic production and import in the total water scarcity footprint of the target crops for 17 mediterranean countries, using marginal AWARE (Boulay et al., 2018) and marginal AWARE2.0 (Seitfudem et al., 2024).

For France, Croatia, and Slovenia, most of the potential impact results from imports, while for Algeria, Egypt, Libya, Morocco, and Spain almost all impact results from the domestic production (See figure in main manuscript). Similar patterns are shown when using marginal CFs of AWARE and AWARE2.0 (Figure 4).

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